Polar Knowledge Canada

2017–18

Departmental Plan

The Honourable Carolyn Bennett, P.C., M.P.
Minister of Indigenous and Northern Affairs

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Minister's message

Our 2017–18 Departmental Plan provides parliamentarians and Canadians with information on what we do and the results we are trying to achieve during the upcoming year. To improve reporting to Canadians, we are introducing a new, simplified report to replace the Report on Plans and Priorities.

The title of the report has been changed to reflect its purpose: to communicate our annual performance goals and the financial and human resources forecast to deliver those results. The report has also been restructured to tell a clearer, more straightforward and balanced story of the actual results we are trying to achieve, while continuing to provide transparency on how tax payers' dollars will be spent. We describe our programs and services for Canadians, our priorities for 2017–18, and how our work will fulfill our departmental mandate commitments and the government's priorities.

The Government of Canada is committed to renewing the relationship between Canada and Indigenous Peoples, tackling the challenge of climate change and promoting economic development and creating jobs for the middle class. Despite being a relatively new agency, Polar Knowledge Canada (POLAR) is making great strides towards these broader priorities in the North, while strengthening Canada's polar science leadership.

As a science-based agency, POLAR's main activities include undertaking and supporting the collection of baseline information, environmental monitoring, scientific research, and technology development to help address the challenges of climate change and strengthen the resilience of northern communities. Knowledge mobilisation, outreach and capacity building are also key areas of work for POLAR. A major priority has been involving and engaging with Indigenous organizations and building capacity at the community level through training and participation in science and technology projects funded or carried out by POLAR.

POLAR is working to ensure that sound scientific knowledge informs decision-making in the North. By investing in scientific research and through the opening of the Canadian High Arctic Research Station (CHARS) campus, POLAR can help foster science to support environmental protection, sustainable development and the creation of jobs.

Engagement is and will continue to be an integral part of POLAR activities and it will help to create greater awareness of POLAR's mandate and polar science research and related opportunities as well as initiate longer term collaborations and partnerships. These partnering efforts have involved a high level of engagement with the Arctic and Antarctic scientific

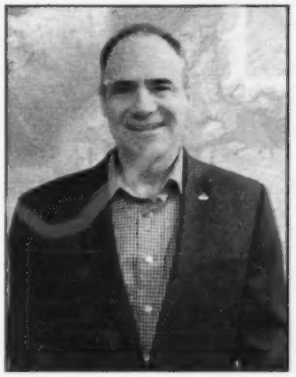
communities through technical workshops, roundtable discussions, conferences and the development of agreements and project-specific initiatives to strengthen polar research.

The Canadian High Arctic Research Station campus in Cambridge Bay, Nunavut, will provide a world-class hub for science, technology and innovation in Canada's North. It will attract international researchers and will help to position Canada as an international leader in polar science and technology. Ultimately, it will help improve economic opportunities, environmental stewardship, and the quality of life of Northerners and all Canadians. POLAR will be headquartered out of the CHARS campus once construction is complete, and will be working to ensure that staffing processes appropriately reflect commitments under the Nunavut Agreement. This facility will bring about major opportunities for Nunavut, including job creation and increased science and technology activity.

I am honoured to have this new polar agency as part of my portfolio and look forward to seeing it deliver on its very exciting mandate.

The Honourable Carolyn Bennett, P.C., M.P.
Minister of Indigenous and Northern Affairs

President & CEO's message



Since our inception on June 1, 2015, POLAR has made significant progress in establishing itself as a new agency, and preparing to operate the CHARS campus once construction is completed in 2017. Our Science and Technology team has expanded the baseline understanding of northern ecosystems; overseen research on alternative and renewable energy and on the impacts of changing ice, permafrost and snow; and built partnerships in support of improved design and construction of northern infrastructure. These partnerships will continue to increase knowledge as their multi-year research continues.

POLAR fulfills a brokering role, strengthening connections between Canadian science-based departments and agencies, Indigenous organizations, industry and private sector and academia within Canada and internationally. Through this pro-active engagement, POLAR is leveraging additional capacity to advance its Science and Technology strategic priorities and broader knowledge mobilization goals in line with Government of Canada priorities.

Consistent with the needs of an emerging new agency, our Knowledge Management and Engagement team has worked to expand public awareness of POLAR and Arctic and Antarctic research with our current stakeholders as well as with new partners. That team is also helping to put northern research to work through knowledge mobilization products that inform decision-makers and support evidence-based policy development, and strengthen Canadian Antarctic research. It is also building polar capacity through science camps, support for training initiatives and student employment in Cambridge Bay, Nunavut.

The coming year will see POLAR continuing to partner with other federal agencies in pursuit of Government of Canada policy priorities in areas such as climate change, environmental stewardship, and open data. POLAR will also increasingly engage northern Indigenous communities to ensure its priorities align with their needs and to ensure that traditional knowledge is respectfully incorporated in our research efforts.

Finally, I look forward to the arrival of newly-hired staff at our headquarters at the Canadian High Arctic Research Station (CHARS) campus in Cambridge Bay. Central to our recruitment and training efforts is our commitment to working towards increasing representation of Nunavut Inuit in POLAR positions. POLAR will continue to support Canada as a leading producer of polar science and knowledge.

David J. Scott, Ph.D.
President and Chief Executive Officer

Plans at a glance

POLAR's Science and Technology (S&T) Program is being delivered with significant multidisciplinary collaboration and partnership with the Canadian northern research community. In the current five-year S&T plan, the focus is on research projects that support alternative and renewable energy, baseline information to prepare for northern sustainability, predicting the impacts of changing cryosphere and catalyzing improved design, construction and maintenance of northern built infrastructure. Beyond the established horizontal S&T priorities, POLAR advances knowledge to improve the economic opportunities, environmental stewardship and quality of life for Northerners and other Canadians.

Investments in Arctic Science and Technology: In December 2016, POLAR launched a competitive funding process for its suite of funding vehicles/mechanisms that support its Northern Science & Technology and Polar Knowledge Application programs. Projects selected for funding will seek to develop and leverage knowledge and capacity to help support responsible and informed development in a rapidly changing North. In addition to supporting our Minister, this competitive funding process supports the priorities of the Minister of Science as outlined in her mandate, which highlights the need "to support scientific research and the integration of scientific considerations in our investment and policy choices" and to "examine options to strengthen the recognition of, and support for, fundamental research to support new discoveries".

Clean Energy Technologies: The results generated through projects that focus on alternative and renewable energy for the North will support the Ministers of Environment and Climate Change, Innovation, Science and Economic Development and of Natural Resources to "mak[e] strategic investments in our clean technology sector". POLAR will continue to implement projects focused on the "northernisation" of existing technologies and on mobilising community energy solutions. In Cambridge Bay, such projects include data collection on heat recovery ventilation, waste stream analysis and monitoring of wind, solar and diesel energy. In addition, POLAR will continue to work with the Arctic Council to help develop the Arctic Remote Energy Network Academy (ARENA), a pan-Arctic training course to develop northern clean energy experts.

Supporting Fundamental Science and Science-Based Decision-Making: Better baseline information and decision-support tools are needed to help build sustainable communities and guide responsible development in the North. In addition, the ability to predict the magnitude and rate of climate change and its impacts on ecosystems and individual communities across the North will be an important determinant of the resilience of Canadian northern communities, the safety and sustainability of shipping, and the viability of infrastructure in the years to come. POLAR will continue to focus on projects that strengthen the information base for improved

decision-making. This focus in part supports the Minister of Fisheries, Oceans and the Canadian Coast Guard and the Minister of Science "to examine the implications of climate change on Arctic marine ecosystems". It also supports the priorities of the Minister of Science, which refers to the need "to support scientific research and the integration of scientific considerations in our investment and policy choices" and to "examine options to strengthen the recognition of, and support for, fundamental research to support new discoveries".

Strategic Canadian and International Partnerships to Support Polar Research: Given the large geographic scope of Canada's Arctic, the rate of change taking place in both the Arctic and the Antarctic, and Canada's polar research capacity, national and international partnerships are a necessary component of POLAR's mandate. POLAR has developed a number of strategic partnerships. For example, POLAR has signed a Memorandum of Understanding (MoU) with the National Aeronautic and Space Administration (NASA) and has initiated a Canadian Arctic-Boreal Vulnerability Experiment (ABoVE) planning team which is identifying research activities that can contribute to and benefit from the ABoVE campaign (http://above.nasa.gov/)[i].

POLAR will be responsible for operationalizing the Agreement on Enhancing Scientific Cooperation in the Arctic which has been negotiated under the Arctic Council Scientific Cooperation Task Force. It will be signed by Foreign Ministers at the next Arctic Council Ministerial meeting in May 2017. To operationalize the agreement, POLAR will be engaging with Indigenous organizations and other partners. POLAR will identify and further develop additional partnerships by continuing to raise Canada's profile internationally as a leader in polar science, and through participation in Canadian and international polar science meetings, workshops and conferences, while highlighting opportunities to undertake research at the world-class CHARS campus.

Northern Infrastructure: In addition to strengthening the recognition of, and support for, fundamental research on the polar regions, POLAR is working to ensure that scientific research informs government decision-making related to physical infrastructure for Indigenous communities. This includes providing scientific and technical information that addresses knowledge needs identified by Northerners that will improve northern housing design and sustainability. This activity supports several priorities of the Minister of Indigenous and Northern Affairs and is also aligned with commitments made under the Canada-US Joint Statement on Climate, Energy, and Arctic Leadership, to "have closer coordination among Indigenous, state, provincial, and territorial governments and the development of innovative options for housing and infrastructure."

For more information on Polar Knowledge Canada's plans, priorities and planned results, see the "Planned results" section of this report.

Raison d'être, mandate and role: who we are and what we do

Raison d'être

Polar Knowledge Canada[ii] is a federal agency (departmental corporation) that was established with the coming into force of the Canadian High Arctic Research Station Act[iii] on June 1, 2015. The Act merged the mandate and functions of the Canadian Polar Commission and the pan-northern science and technology program associated with the Canadian High Arctic Research Station (CHARS) project of AANDC (now INAC).

The purpose of Polar Knowledge Canada as stated in the Act is to:

- Advance knowledge of the Canadian Arctic in order to improve economic opportunities, environmental stewardship and the quality of life of its residents and all other Canadians.
- Promote the development and dissemination of knowledge of the other circumpolar regions, including the Antarctic.
- Strengthen Canada's leadership on Arctic issues.
- Establish a hub for scientific research in the Canadian Arctic.

Mandate and role

The functions of Polar Knowledge Canada are to:

- Undertake scientific research and develop technology.
- Implement scientific research and technology development programs and projects.
- Promote the testing, application, transfer, diffusion and commercialization of technology.
- Publish and disseminate studies, reports and other documents.
- Complement national and international networks of expertise and of facilities.

Polar Knowledge Canada will be headquartered at the Canadian High Arctic Research Station (CHARS) campus in Cambridge Bay, Nunavut, once the station is operational in 2017. The CHARS campus comprises a main research building, a field and maintenance building and living accommodations for visiting researchers. CHARS construction continues to be managed by INAC until commissioning is completed, the campus will then become part of Polar Knowledge Canada. Key elements of the governance of POLAR are:

- Polar Knowledge Canada reports to the Minister of Indigenous and Northern Affairs.
- A nine member Board of Directors is responsible for oversight, long-term strategic direction and decisions on the annual budget and work plans of the organization.

- The President and CEO, as the Deputy Head of the agency, is accountable for day-to-day management of Polar Knowledge Canada.
- Science and Technology is responsible for managing the implementation of the Science and Technology Program; Knowledge Management and Engagement is responsible for knowledge mobilization, communications, outreach and capacity building activities; and Human Resources and Corporate Services is responsible for internal services.

For more general information about Polar Knowledge Canada, see the "Supplementary information" section of this report. For more information on Polar Knowledge Canada's organizational mandate letter commitments, see the Minister's mandate letter on the Prime Minister of Canada's website.[iv]

Operating context: conditions affecting our work

Canada's North is undergoing significant change driven by a number of complex factors, some global in nature, others rooted in the dynamics of the region's unique history, and others stemming from the increased empowerment of Indigenous peoples through settled comprehensive land claims. Key influences at this time include:

- Rapid environmental change occurring in the Arctic, including its climate and weather extremes, through increased temperatures and the continuing loss of ice, glaciers, snow and permafrost. These changes in the Arctic, which affect the entire planet, are challenging our understanding of their consequences and our ability to provide knowledge for decision-makers. These changes are also directly impacting the people who live in the North, including Indigenous peoples and their traditional food sources.
- High costs of doing research in both the Arctic and the Antarctic, as a result of the remoteness of the polar regions, logistical challenges, and extreme environmental conditions.
- Economic interests in the Arctic which have established the region as a larger player in the global economy, but also with very significant local effects. In spite of rapid environmental and social change, the Arctic remains a region of geopolitical stability which is a pre-condition for sustaining Arctic research.
- Increasing political and economic empowerment of Northerners, exemplified by the devolution of responsibility for lands and resource management to territorial governments and the gradual shifting of the control of the research agenda northward.
- Ongoing advances in Indigenous self-government taking place throughout the region and their positive effects on government policies, including how research is undertaken.
- Lower levels of educational attainment among Inuit impacting the preparedness of Inuit for certain types of positions within POLAR.
- Heightened interest of Canadians regarding the Arctic and Antarctic.
- The fact that developing local technical capacity and ensuring community buy-in and participation will be critical to technology development and transfer in the North. The private sector must also be motivated to pursue the smaller northern markets for these new technologies.

Key risks: things that could affect our ability to achieve our plans and results

As a new agency, there are a number of risks outside of POLAR's control that can potentially impact the achievement of planned results. Efforts are underway to try to mitigate these risks through sustained engagement, capacity building, funding programs, partnership development and staffing processes.

Community buy-in is one possible risk given the upcoming opening of the CHARS campus in Cambridge Bay, which will serve as the eventual headquarters of POLAR. The internal conditions influencing this risk include the ongoing staffing process and relocation of employees to Nunavut, the recently launched competitive funding process and ongoing community engagement. Stakeholder expectations regarding the benefits derived from the CHARS campus are extremely high in terms of employment opportunities for local people, economic development in Nunavut, and support for local businesses and organizations. POLAR is seeking to mitigate this risk through outreach and engagement, hiring of local people, and support for education programs and science camps in Cambridge Bay. There are also expectations by other jurisdictions in Canada's North regarding the ability of POLAR's programs to have an impact in other areas of Canada (specifically Yukon, the Northwest Territories, Nunavik and Nunatsiavut) as well as the trickle down effect from having the CHARS campus as a "hub" for national and international science activities.

Inability to deliver on objectives of the pan-northern S&T Program is a specific risk for POLAR as a science-based agency. The scope of the S&T program is very broad and has increased expectations by partner organizations for POLAR to be fulfilling a world-class science function as well as a coordination role in Canada on Arctic and Antarctic science. The breadth and complexity of this work will make delivery a challenge with current resource levels. To mitigate this risk, POLAR is developing partnerships to help address gaps in capacity and science expertise. Partnership efforts include multiple stakeholders, such as federal government departments/agencies, northern organizations, territorial governments, academia, Indigenous organizations and international players.

Recruitment and retention of highly-qualified staff will be an ongoing risk for POLAR. Many factors, including the interest, availability and preparedness of Inuit for positions within POLAR, will have implications for POLAR's obligations under the Nunavut Agreement to work towards 85% representation of Inuit across job groups and levels. Although POLAR will continue to give preference to job applicants who self-identify as Inuit under the Nunavut Agreement, increasing Inuit representation will be especially challenging given that there are science-specific classfications and post-graduate (M.Sc., Ph.D.) education requirements for many positions

related to the S&T program. This risk is compounded by the fact that the CHARS campus is in a small Northern community with a limited local labour pool for science-focused positions. As a result, POLAR will continue to support Pilimmaksaivik in the development and implementation of a whole-of-government (WoG) approach to Inuit employment and training, and develop and implement a POLAR-specific Inuit Employment and Pre-employment Training Plan that supplements and leverages WoG initiatives. This includes continuing efforts to support long-term capacity building among youth in Nunavut, including through funding science camps and workshops.

POLAR may struggle to attract and retain scientific and technical staff to work in Cambridge Bay, therefore, measures will be implemented to attract early and late-career researchers for employment opportunities with POLAR, and promote POLAR and CHARS to the Canadian academic community.

Addressing the risks highlighted is important to the agency as successful mitigation will ultimately allow POLAR to implement its mandate and meet stakeholder expecations. The upcoming opening of the CHARS campus will be a key transition period for the organization as well as for the Cambridge Bay community. In addition, the potential positive impact of the science and knowledge generated by the S&T program should help Canadians better understand fundamental changes occurring to the environment in Canada's North. Employment and training opportunities offered by POLAR in Cambridge Bay should also contribute positively to the economic development of the region.

Key risks

Risks	Risk response strategy	Link to the department's Programs	Link to mandate letter commitments or to government-wide and departmental priorities (as applicable)
Community buy-in Northern communities may not see direct benefits to the activities undertaken, including through the creation of jobs.	Community outreach and engagement, community involvement in projects, development of local capacity, including through summer jobs for students. Hiring of local graduates from Nunavut Arctic College Environmental Technology Program (ETP) and fostering an	Outreach and Capacity Building Internal Services	Minister Bennett mandate letter: Renew the relationship between Canada and Indigenous Peoples, based on recognition, rights, respect, co-operation, and partnership.

	interest in S&T in Northern youth to prepare the next generation for employment at POLAR. Continued engagement and consultation with key stakeholders and partners.		
Inability to deliver on objectives of the pan-northern S&T Program	Build-up in-house capacity to conduct science and technology projects in support of mandate. Increase cooperation between other federal departments. Leverage partnerships (depts., industry, international, etc.) to increase ability to deliver on the objectives of this program and its sub-programs	Science and Technology for the North	Minister of Science: To support scientific research and the integration of scientific considerations in our investment and policy choices Work in collaboration with the Minister of Fisheries, Oceans and the Canadian Coast Guard and the Minister of Environment and Climate Change to examine the implications of climate change on Arctic marine ecosystems. Examine options to strengthen the recognition of, and support for, fundamental research to support new discoveries

Inuit representation in POLAR positions The interest, availability and preparedness of Inuit and other factors will have implications for POLAR's obligations under the Nunavut Agreement to work towards 85% representation of Inuit across job groups and levels	Continue to support Pilimmaksaivik in the development and implementation of a whole-of-government (WoG) approach to Inuit employment and training Develop and implement a POLAR-specific Inuit Employment and Pre-employment Training Plan that supplements and leverages WoG initiatives	Internal services Outreach and capacity building	Nunavut Agreement Moving Forward in Nunavut: An Agreement Relating to Settlement of Litigation and Certain Implementation Matters between the Inuit of Nunavut and the Government of Canada and the Government of Nunavut
Staff Recruitment and Retention POLAR may struggle to attract and retain scientific and technical staff to work in Cambridge Bay. Loss of momentum and difficulties with program continuity as temporary staff turns over in favour of permanent staff	Staffing will target Inuit and early and late career scientists and personnel. Ensure appropriate transition period between temporary and permanent staff. Continue to support Pilimmaksaivik in the development and implementation of a whole-of-government (WoG) approach to Inuit employment and training Develop and implement a POLAR-specific Inuit Employment and Pre-employment Training Plan that supplements and leverages WoG initiatives Funding of programs targeting Inuit youth to increase interest in science-based positions	Science and Technology for the North Internal services	Minister Bennett mandate letter: Renew the relationship between Canada and Indigenous Peoples, based on recognition, rights, respect, co-operation, and partnership. Nunavut Agreement Moving Forward in Nunavut: An Agreement Relating to Settlement of Litigation and Certain Implementation Matters between the Inuit of Nunavut and the Government of Canada and the Government of Nunavut

Planned results: what we want to achieve this year and beyond

Program: Science and Technology for the North

Description

This program aims to anchor a strong research presence in Canada's Arctic. It consists of two sub-programs: 1) Science and Monitoring and 2) Technology Development and Transfer. By partnering with key stakeholders and through its internal science and technology capacity, POLAR will acquire the wide range of information needed to pursue effective solutions to polar issues, policy and program development, and advance Canada's position as a leading Arctic nation. This program will create an environment in which both traditional knowledge and science contribute to addressing challenges in the Arctic.

Sub-Program: Science and Monitoring

The Science and Monitoring sub-program aims to collaborate with organizations on cross-disciplinary and cross-sectoral issues in order to leverage collective experience, expertise, and resources. This program will also fund, through its Grants and Contributions program, external recipients (e.g., academics, communities, not-for-profit organizations, industry, and other levels of governments) who can help deliver on POLAR's priorities on science, technology and monitoring excellence.

Sub-Program: Technology Development and Transfer

The Technology Development and Transfer sub-program aims to establish POLAR as a major hub for arctic technology development by providing a research platform, expertise, infrastructure, and funding to support northern entrepreneurs and innovators in developing, adapting, and testing technologies that could be used in the North.

Planning highlights

The following priorities and initiatives support this program:

(1) Alternative and Renewable Energy: Reduce the dependency on high-cost imported energy, explore feasibility of local sources and enhance northern application of alternative technologies.
(2) Baseline information to prepare for northern sustainability: POLAR's science and technology team will continue to work on baseline inventories of the ecosystem in the CHARS Experimental Reference Area through the establishment of monitoring instruments (e.g. weather stations, eddy covariance towers, in-stream flow monitors).

(3) Predicting the impacts of changing ice, permafrost and snow on shipping, infrastructure and communities: Increase knowledge of the frozen elements of the terrestrial and marine cryosphere to support adaptation and improve climate models.
(4) Catalyzing improved design, construction and maintenance of northern built infrastructure: Apply innovative designs, materials and techniques to increase energy efficiency, quality, and reduce life-cycle costs of northern infrastructure.

Competitive Funding Process

The Science and Technology Program will further help fulfil its priorities through a Competitive Funding Process[v] for projects starting in 2017-18. Successful projects must fit under one of the following themes: Community-driven research and monitoring; In-situ research and monitoring, NASA Arctic-Boreal Vulnerability Experiment (ABoVE); Mobilizing community energy solutions, "Northernization" and testing of clean energy technologies; Research, monitoring, development and/or deployment of innovative northern housing infrastructure; and Adapting waste processing systems to northern environments. In order to improve on previous competitive funding processes, starting in 2017-18 POLAR is ensuring that all contribution agreements clearly articulate a reporting structure for recipients, a broad range of recipients are eligible for funds and that the geographic scope includes all locations across the Canadian North (three territories, Nunavik and Nunatsiavut). In addition, POLAR is giving preference to projects that help strengthen Northern capacity and leadership in science and technology and knowledge management and engagement by encouraging the incorporation of Indigenous Knowledge (IK) in project design and implementation, leadership and involvement of Northerners and communities, integration of local or community-level training and capacity building and a multidisciplinary approach.

Support of research projects

POLAR also continues to fund and support multi-year research projects (2015-2018) through a Competitive Funding Process in the field of northern monitoring and for projects located in regions of significant resource development. POLAR created new multi-year funding agreements to support these projects until March 31, 2018. These new agreements include detailed revised budgets, workplans and reporting structures. This same rigor will be applied to all new projects funded through the Agency's Competitive Funding processes.

Scientific publications

Through the delivery of its programs, POLAR will acquire a wide range of information needed to pursue effective solutions to polar isues, policy and program development, and advance Canada's position as a leading Arctic nation. This acquired information will be disseminated

through an annual scientific publication that will focus on research topics of key importance to POLAR in support of its overall mandate. In addition, POLAR has developed a reporting structure for all its recipients and implemented data management guidelines in order to ensure that a metadata record for all its funded projects is traceable and can be reported in a timely fashion.

Planned Results

Expected results	Performance indicators	Target	Date to achieve target	2013–14 Actual results *	2014–15 Actual results	2015–16 Actual results
1.1 Sustainable use of Arctic land and resources is supported by science and technology research and training activities facilitated by POLAR	The number of projects undertaken via agreements/ MOUs with external partners	Baseline to be determined	Baseline to be determined	Not available	The number of projects undertaken via agreements/ MOUs with external partners: 49	The number of projects undertaken via agreements/ MOUs with external partners: 35
	The number of joint research projects with external partners	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown
	The level of investment by partners in research activities with POLAR	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown
	The number of scientists working with POLAR	Baseline to be determined	Baseline to be determined	Not available	Total number of Principal Investigator working with POLAR: 45	Total number of Principal Investigator working with POLAR: 31

	The number of researchers using CHARS facilities (e.g., GoC, International)	Baseline to be determined	Baseline to be determined	Not available	none	
1.1.1 Projects funded by POLAR strengthen northern capacity and leadership in science and monitoring	The number of monitoring projects with external partners	Baseline to be determined	Baseline to be determined	Not available	POLAR launched a Call for Proposals in 2015 that supported 9 monitoring projects with external partners.	POLAR launched a Call for Proposals in 2015 that supported 17 monitoring projects with external partners.
	Investment by partners in monitoring activities with POLAR	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown
	Take up on competitive award processes	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown
	Publications of POLAR supported research	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown
	Number of citations of POLAR research	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown
1.1.2 Solutions to Arctic challenges are developed using traditional or	The number of technology projects with external partners	Baseline to be determined	Baseline to be determined	Not available	2	1

local knowledge and science and technology						
	Investment by partners in technology projects with POLAR	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown
	Spin off investments/ sales of new technologies in northern communities	Baseline to be determined	Baseline to be determined	Not available	data unknown	data unknown

* Polar Knowledge Canada was created by the Canadian High Arctic Research Station Act which came into force on June 1, 2015.

Budgetary financial resources (dollars)

2017–18 Main Estimates	2017–18 Planned spending	2018–19 Planned spending	2019–20 Planned spending
13,599,331	13,599,331	16,336,826	16,336,826

Human resources (full-time equivalents)

2017–18 Planned full-time equivalents	2018–19 Planned full-time equivalents	2019–20 Planned full-time equivalents
22	25	25

Program: Polar Knowledge Application

Description

The program aims to promote and further strengthen polar science and technology nationally and internationally and build science capacity through training, outreach, and learning opportunities. Outreach and engagement activities will provide the feedback necessary to ensure polar knowledge is relevant to partners, including Indigenous Peoples. The program consists of two sub-programs: 1) Knowledge Management and 2) Outreach and Capacity Building

Planning highlights

Knowledge mobilization:

- **Synthesize scientific information and data on the Arctic and identify value-added knowledge products to inform key decisions on the polar regions**. POLAR will collect and generate knowledge and translate science results into language amenable for public consumption.
- **Facilitate discussions on priority research gaps and areas for collaboration with specific relevance to Northerners** such as housing, so that planning and execution of research addresses knowledge needs identified by Northerners. This will support the translation of knowledge into tangible outcomes for indigenous communities, industry, decision-makers, and stakeholders across all of the science and technology activities.
- **Promote the development and dissemination of knowledge of other circumpolar regions, including the Antarctic**, through bilateral agreements and participation in international fora in order to strengthen collaboration between the Canadian and international polar science communities to leverage additional capacity and address key knowledge gaps. Continue to advance the development of a Canadian Antarctic Research Program to strengthen Canada's polar science leadership and capacity, building on the findings from a Canadian Antarctic Research Workshop convened by POLAR in October 2016.
- **Facilitate improved access to information and information sharing**, by enabling access to POLAR research files and encouraging collaboration with respect to information and knowledge management for the polar regions. This will involve collaboration with the Polar Data Catalogue to develop policies that ensure open access to Arctic and Antarctic data, including from POLAR funded projects in order to support decision-making and further research by various stakeholders.

Communications and outreach

- **Strengthen awareness of POLAR's mandate** through the development and use of a range of tools, including a visual identifier, the Polar Knowledge App, circumpolar maps, booths, videos, photo exhibits and giant educational floor maps.
- **Promote and build a science culture in Canada** in order to increase public awareness and interest in Arctic and Antarctic research and to communicate POLAR activities, including through radio interviews, webinars, articles, publications and video/TV coverage to foster contact with northern communities and other stakeholder groups.
- **Host public events at the CHARS campus** to share results of research with the community.
- **Demonstrate and strengthen Canadian leadership on polar research**, by participating in and being visible at science conferences and events, and ensure strong participation of Canadian researchers and Indigenous organizations in international polar science initiatives, and help improve science cooperation among Arctic states. This will include operationalizing the Agreement on Enhancing Scientific Cooperation in the Arctic that will be signed by Foreign Ministers at the next Arctic Council Ministerial meeting in May 2017, by engaging with Indigenous organizations and other partners.

Capacity Building

- **Continue to deliver science camps to youth** in Cambridge Bay on subjects including Science, Technology, Engineering and Math (STEM). Provide funding support to other partners to ensure increased engagement of Northern youth in STEM activities.
- **Support** training opportunities to develop and strengthen northern science capacity and prepare Nunavut Inuit for POLAR positions in respect of POLAR's Inuit employment obligations under Article 23 of the Nunavut Agreement. This will involve supporting and collaborating with northern partners, such as Nunavut Arctic College.
- **Continue to administer the Northern Scientific Training Program**, which provides supplementary funding to over 300 early career northern researchers annually at over 35 universities across Canada, and work to increase the program's effectiveness.
- **Present the annual Northern Science Award** to recognize knowledge creation that benefits Northerners.

POLAR's outreach and capacity building plans support priorities of the Minister of Indigenous and Northern Affairs with respect to renewing the relationship between Canada and Indigenous Peoples, and working towards Government of Canada Inuit employment and pre-employment training obligations under the Nunavut Agreement. Community outreach will be critical to obtain community input, feedback, and participation and foster capacity building. The focus will be on

involving and engaging with partners including Indigenous groups and building capacity at the community level through training and participation in science and technology projects.

Given POLAR's horizontal mandate, POLAR's planned knowledge mobilization and outreach activities support the science, physical infrastructure, marine ecosystem, climate change, clean technology priorities outlined in the mandate letters of several Ministers, including Indigenous and Northern Affairs, Science, Infrastructure and Communities, Fisheries and Oceans, and Environment and Climate Change. They also support a Minister of Foreign Affairs priority to "restore constructive Canadian leadership in the world", including by "reenergiz[ing] Canadian diplomacy and leadership on key issues and in multilateral institutions".

Information and knowledge regarding polar research will be more accessible, disseminated strategically, and will meet the needs of partners including indigenous communities. Improved knowledge will be available to inform policy and evidence-based decision-making. Indicators of success will be the level of buy-in to projects in northern communities, awareness of the POLAR mandate among scientific research organizations (nationally and internationally), the level of public awareness of POLAR, the level of media coverage (trend in the number of media references), web/social media traffic volume based on web analytics data, and the extent to which partners access POLAR knowledge products and policy and government decision-makers use the information for decision-making.

Planned Results

Expected results	Performance indicators	Target	Date to achieve target	2013–14 Actual results *	2014-15 Actual results	2015-2016 Actual results
1.1 Science and Technology for the North	The number of projects undertaken via agreements/ MOUs with external partners	Baseline to be determined	Baseline to be determined	Data not available	A Declaration of Cooperation was signed between the Canadian Polar Commision (now POLAR) and the Arctice Society of Finland, which will help strengthen international collaborations on Arctic research and attract scientists to undertake their work at the CHARS campus once construction is complete.	POLAR signed an MOU with the Korea Polar Research Institute which will help strengthen international collaborations on Arctic research and attract scientists to undertake their work at the CHARS campus once construction is complete. POLAR led Canada's delegation to the Arctic Council's Scientific Cooperation Task Force to negotiate a new legally-binding international Agreement among the eight Arctic States. This Agreement is expected to be signed at

						the Arctic Council Ministerial in May 2017.
1.1.1 Science and monitoring		Baseline to be determined	Baseline to be determined	Data not available	Data not available	Support provided to the Canadian Network of Northern Research Operators (CNNRO) to allow the development of a strategic plan to better connect infrastructure and research facilities across Canada.
1.2 Polar Knowledge Application	Canada's science and technology programming and policies are impacted by knowledge on polar science and technology	Baseline to be determined	Baseline to be determined	Production of "The State of Northern Knowledge in Canada" and report.	Production of the "State of Environmental Monitoring in Northern Canada" report	POLAR together with Canada Mortgage and Housing Corporation, National Research Council and Natural Resources Canada cconvened a workshop to discuss opportunities to leverage resources and collaborate on short, mid-term actions to achieve practical improvements to housing in the North

1.2.1 Knowledge Management	Knowledge gathered and produced by Polar Knowledge Canada informs polar science and technology stakeholders	Baseline to be determined	Baseline to be determined	Data not available	Data not available	Developed circumpolar maps that have been distributed to key partners and stakeholders in order to increase knowledge of the Arctic and Antarctic. Funding support that allowed the Kitikmeot Heritage Society develop a research guide to support activities in/ around Cambridge Bay. POLAR staff participated in numerous Canadian and international conferences and workshops to promote the mandate of the Agency and build partnerships with other organization. Development of pamphlets to highlight POLAR's mandate and production of

						short POLAR 101 video.
1.2.2 Outreach and Capacity Building	The level of participation in projects by northern communities (e.g., number of northern-based participants, nature & duration of involvement, community engagement) Awareness of the POLAR mandate among scientific research organizations (nationally and internationally) POLAR web traffic volume based on web analytics data; media coverage (trend in the number of media references) and level of social media coverage and interactions Level and number of POLAR opportunities for science or science support related	Baseline to be determined	Baseline to be determined	Data not available	Support for the Environmental Technology Program (ETP) in Cambridge Bay, which helps develop a workforce with appropriate skills for employment at the CHARS campus.	Financial support towards the Arctic Inspiration Prize in 2015 POLAR organized 10 science camps (total of 69 participants) in Cambridge Bay, Nunavut to promote science, technology, engineering and mathematics (STEM) to Northern youth. POLAR provided over $100,000 in support to Actua to facilitate the delivery of workshops and camps for Northern youth in Nunavut. Launch of the POLAR-Students on Ice (SOI) Inspiration Grants Program that support SOI alumni

	training for northerners Number of jobs created for northerners with POLAR support Number of science camps receiving POLAR support (including number and age range of participants) Number of northerners employed by POLAR (including number of applicants, success rate, Inuit representation, career progression)					projects that benefit the Canadian Arctic. 3 winning projects selected from different regions of Canda's North. Increased social media presence, including twitter and facebook. Support Environmental Technology Program (ETP) at Nunavut Arctic College in Cambridge Bay. Total of 4 summer students hired in Cambridge Bay for summer 2015.

* Polar Knowledge Canada was created by the Canadian High Arctic Research Station Act which came into force on June 1, 2015.

Budgetary financial resources (dollars)

2017–18 Main Estimates	2017–18 Planned spending	2018–19 Planned spending	2019–20 Planned spending
3,106,557	3,106,557	4,328,366	4,328,366

Human resources (full-time equivalents)

2017–18 Planned full-time equivalents	2018–19 Planned full-time equivalents	2019–20 Planned full-time equivalents
14	14	14

Internal Services

Description

Internal Services are those groups of related activities and resources that the federal government considers to be services in support of programs and/or required to meet corporate obligations of an organization. Internal Services refers to the activities and resources of the 10 distinct service categories that support Program delivery in the organization, regardless of the Internal Services delivery model in a department. The 10 service categories are: Management and Oversight Services; Communications Services; Legal Services; Human Resources Management Services; Financial Management Services; Information Management Services; Information Technology Services; Real Property Services; Materiel Services; and Acquisition Services.

Planning highlights

This section provides an overview of the key initiatives, activities and actions that POLAR plans to take in support of internal services.

POLAR's internal services delivery and management initiatives noted below will continue to be grounded in sound financial management practices, and designed to improve the efficient and effective delivery of programs and operations.

- Continue to staff the POLAR organization to increase internal capacity and recruit staff to CHARS campus in Cambridge Bay as facilities are operational.
- Continue to support Pilimmaksaivik in the development and implementation of a whole-of-government (WoG) approach to Inuit employment and training and POLAR-specific plans that supplement and leverage WoG initiatives.
- Continue to adopt and enhance information management and information technology solutions to advance collection, management, reporting, and safeguarding of business information within POLAR and with its partners.
- Continue to build a solid foundation for internal services through the ongoing development of corporate management programs, notably in the area of planning and performance measurement, occupational health and safety, information techonology and information management, and project management.
- Continue to build sound financial management practices for POLAR by establishing forecasting tools and engaging managers in financial planning.
- Continue to assess options to support POLAR's corporate process management, in particular, human resources, business intelligence, and financial information systems (for example onboarding of SAP).

- Continue to collaborate with INAC to ensure smooth transition of the CHARS campus to POLAR. This includes obtaining legal authorities for property management related to the campus.
- Continue to provide robust grants and contributions programming that aligns and supports POLAR's Northern Science and Technology and Knowledge Management Applications programs.
- Continue to ensure a healthy and respectful workplace by providing access to employee services that foster health and wellbeing.

Budgetary financial resources (dollars)

2017–18 Main Estimates	2017–18 Planned spending	2018–19 Planned spending	2019–20 Planned spending
4,888,343	4,888,343	8,189,945	8,189,945

Human resources (full-time equivalents)

2017–18 Planned full-time equivalents	2018–19 Planned full-time equivalents	2019–20 Planned full-time equivalents
16	18	18

Spending and human resources

Planned spending

Budgetary planning summary for Programs and Internal Services (dollars)

Programs and Internal Services	2014–15 Expenditures	2015–16 Expenditures	2016–17 Forecast spending	2017–18 Main Estimates	2017–18 Planned spending	2018–19 Planned spending	2019–20 Planned spending
Science and Technology for the North	Not applicable	5,391,920	9,361,303	13,599,331	13,599,331	16,336,826	16,336,826
Polar Knowledge Application	Not applicable	1,088,049	2,686,962	3,106,557	3,106,557	4,328,366	4,328,366
Subtotal	Not applicable	6,479,969	12,048,265	16,705,888	16,705,888	20,665,192	20,665,192
Internal Services	Not applicable	1,806,742	5,246,136	4,888,343	4,888,343	8,189,945	8,189,945
Total	Not applicable	8,286,711	17,294,401	21,594,231	21,594,231	28,855,137	28,855,137

Planned human resources

Human resources planning summary for Programs and Internal Services (full-time equivalents)

Programs and Internal Services	2014–15 Full-time equivalents *	2015–16 Full-time equivalents	2016–17 Forecast full-time equivalents	2017–18 Planned full-time equivalents	2018–19 Planned full-time equivalents	2019–20 Planned full-time equivalents
Science and Technology for the North	Not applicable	14	16	22	25	25
Polar Knowledge Application	Not applicable	6	10	14	14	14
Subtotal	Not applicable	20	25	36	39	39
Internal Services	Not applicable	8	15	16	18	18
Total	Not applicable	28	40	52	57	57

Estimates by vote

For information on the Polar Knowledge Canada's organizational appropriations, consult the 2017–18 Main Estimates.[vi]

Future-Oriented Condensed Statement of Operations

The Future-Oriented Condensed Statement of Operations provides a general overview of Polar Knowledge Canada's operations. The forecast of financial information on expenses and revenues is prepared on an accrual accounting basis to strengthen accountability and to improve transparency and financial management.

Because the Future-Oriented Condensed Statement of Operations is prepared on an accrual accounting basis, and the forecast and planned spending amounts presented in other sections of the Departmental Plan are prepared on an expenditure basis, amounts may differ.

A more detailed Future-Oriented Statement of Operations and associated notes, including a reconciliation of the net cost of operations to the requested authorities, are available on Polar Knowledge Canada's website[vii].

Future-Oriented Condensed Statement of Operations for the year ended March 31, 2018 (dollars)

Financial information	2016–17 Forecast results	2017–18 Planned results	Difference (2017–18 Planned results minus 2016–17 Forecast results)
Total expenses	16,992,513	22,525,492	5,532,979
Total revenues	(19,400)	(373,700)	(354,300)
Net cost of operations before government funding and transfers	17,011,913	22,899,192	5,887,279

Supplementary information

Corporate information

Organizational profile

Appropriate minister(s): The Honourable Carolyn Bennett, P.C., M.P.

Chairperson: Mr. Richard Boudreault

Institutional head: Dr. David J. Scott, Ph.D., President and Chief Executive Officer

Ministerial portfolio: Indigenous and Northern Affairs

Enabling instrument(s): Canadian High Arctic Research Station Act

Year of incorporation / commencement: 2015

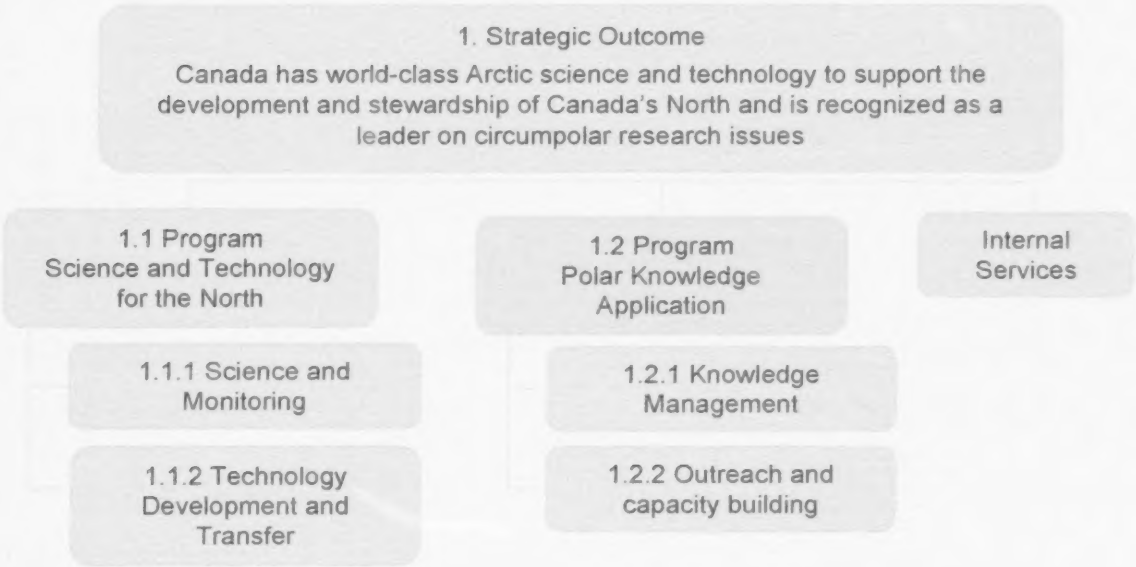
Other: Administration of Polar Knowledge Canada (POLAR) is overseen by a nine-member Board of Directors, including a Chairperson and Vice-Chairperson. The Board approves the organization's science and technology plan and annual work plans and budget. The Board is accountable to the Minister of Indigenous and Northern Affairs. All positions are appointed by Order-in-Council to hold office for terms not exceeding five years, and are eligible for re-appointment for a second term of office. Members of the Board of Directors hold office on a part-time basis.

Reporting framework

The Polar Knowledge Canada's Strategic Outcome and Program Alignment Architecture of record for 2017–18 are shown below:

1. **Strategic Outcome:** Canada has world-class Arctic science and technology to support the development and stewardship of Canada's North and is recognized as a leader on circumpolar research issues.

    1.1 Program: Science and Technology for the North
        1.1.1 Sub-Program: Science and Monitoring
        1.1.2 Sub-Program: Technology Development and Transfer
    1.2 Program: Polar Knowledge Application
        1.2.1 Sub-Program: Knowledge Management
        1.2.2 Sub-Program: Outreach and Capacity Building
    Internal Services


1. Strategic Outcome
Canada has world-class Arctic science and technology to support the development and stewardship of Canada's North and is recognized as a leader on circumpolar research issues
1.1 Program Science and Technology for the North
1.1.1 Science and Monitoring
1.1.2 Technology Development and Transfer
1.2 Program Polar Knowledge Application
1.2.1 Knowledge Management
1.2.2 Outreach and capacity building
Internal Services

Supplementary information tables

The following supplementary information tables are available on Polar Knowledge Canada's website[VIII].

- Details on transfer payment programs of $5 million or more
- Disclosure of transfer payment programs under $5 million
- Horizontal initiatives

Federal tax expenditures

The tax system can be used to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. The Department of Finance Canada publishes cost estimates and projections for these measures each year in the Report on Federal Tax Expenditures.[IX] This report also provides detailed background information on tax expenditures, including descriptions, objectives, historical information and references to related federal spending programs. The tax measures presented in this report are the responsibility of the Minister of Finance.

Organizational contact information

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Appendix: definitions

appropriation (crédit)

Any authority of Parliament to pay money out of the Consolidated Revenue Fund.

budgetary expenditures (dépenses budgétaires)

Operating and capital expenditures; transfer payments to other levels of government, organizations or individuals; and payments to Crown corporations.

Core Responsibility (responsabilité essentielle)

An enduring function or role performed by a department. The intentions of the department with respect to a Core Responsibility are reflected in one or more related Departmental Results that the department seeks to contribute to or influence.

Departmental Plan (Plan ministériel)

Provides information on the plans and expected performance of appropriated departments over a three-year period. Departmental Plans are tabled in Parliament each spring.

Departmental Result (résultat ministériel)

A Departmental Result represents the change or changes that the department seeks to influence. A Departmental Result is often outside departments' immediate control, but it should be influenced by program-level outcomes.

Departmental Result Indicator (indicateur de résultat ministériel)

A factor or variable that provides a valid and reliable means to measure or describe progress on a Departmental Result.

Departmental Results Framework (cadre ministériel des résultats)

Consists of the department's Core Responsibilities, Departmental Results and Departmental Result Indicators.

Departmental Results Report (Rapport sur les résultats ministériels)

Provides information on the actual accomplishments against the plans, priorities and expected results set out in the corresponding Departmental Plan.

full-time equivalent (équivalent temps plein)

A measure of the extent to which an employee represents a full person-year charge against a departmental budget. Full-time equivalents are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

government-wide priorities (priorités pangouvernementales)

For the purpose of the 2017–18 Departmental Plan, government-wide priorities refers to those high-level themes outlining the government's agenda in the 2015 Speech from the Throne, namely: Growth for the Middle Class; Open and Transparent Government; A Clean Environment and a Strong Economy; Diversity is Canada's Strength; and Security and Opportunity.

horizontal initiatives (initiative horizontale)

A horizontal initiative is one in which two or more federal organizations, through an approved funding agreement, work toward achieving clearly defined shared outcomes, and which has been designated (e.g. by Cabinet, a central agency, etc.) as a horizontal initiative for managing and reporting purposes.

Management, Resources and Results Structure (Structure de la gestion, des ressources et des résultats)

A comprehensive framework that consists of an organization's inventory of programs, resources, results, performance indicators and governance information. Programs and results are depicted in their hierarchical relationship to each other and to the Strategic Outcome(s) to which they contribute. The Management, Resources and Results Structure is developed from the Program Alignment Architecture.

non-budgetary expenditures (dépenses non budgétaires)

Net outlays and receipts related to loans, investments and advances, which change the composition of the financial assets of the Government of Canada.

performance (rendement)

What an organization did with its resources to achieve its results, how well those results compare to what the organization intended to achieve, and how well lessons learned have been identified.

Performance indicator (indicateur de rendement)

A qualitative or quantitative means of measuring an output or outcome, with the intention of gauging the performance of an organization, program, policy or initiative respecting expected results.

Performance reporting (production de rapports sur le rendement)

The process of communicating evidence-based performance information. Performance reporting supports decision making, accountability and transparency.

planned spending (dépenses prévues)

For Departmental Plans and Departmental Results Reports, planned spending refers to those amounts that receive Treasury Board approval by February 1. Therefore, planned spending may include amounts incremental to planned expenditures presented in the Main Estimates.

A department is expected to be aware of the authorities that it has sought and received. The determination of planned spending is a departmental responsibility, and departments must be able to defend the expenditure and accrual numbers presented in their Departmental Plans and Departmental Results Reports.

plans (plan)

The articulation of strategic choices, which provides information on how an organization intends to achieve its priorities and associated results. Generally a plan will explain the logic behind the strategies chosen and tend to focus on actions that lead up to the expected result.

Priorities (priorité)

Plans or projects that an organization has chosen to focus and report on during the planning period. Priorities represent the things that are most important or what must be done first to support the achievement of the desired Strategic Outcome(s).

program (programme)

A group of related resource inputs and activities that are managed to meet specific needs and to achieve intended results and that are treated as a budgetary unit.

Program Alignment Architecture (architecture d'alignement des programmes)

A structured inventory of an organization's programs depicting the hierarchical relationship between programs and the Strategic Outcome(s) to which they contribute.

results (résultat)

An external consequence attributed, in part, to an organization, policy, program or initiative. Results are not within the control of a single organization, policy, program or initiative; instead they are within the area of the organization's influence.

statutory expenditures (dépenses législatives)

Expenditures that Parliament has approved through legislation other than appropriation acts. The legislation sets out the purpose of the expenditures and the terms and conditions under which they may be made.

Strategic Outcome (résultat stratégique)

A long-term and enduring benefit to Canadians that is linked to the organization's mandate, vision and core functions.

sunset program (programme temporisé)

A time-limited program that does not have an ongoing funding and policy authority. When the program is set to expire, a decision must be made whether to continue the program. In the case of a renewal, the decision specifies the scope, funding level and duration.

target (cible)

A measurable performance or success level that an organization, program or initiative plans to achieve within a specified time period. Targets can be either quantitative or qualitative.

voted expenditures (dépenses votées)

Expenditures that Parliament approves annually through an Appropriation Act. The Vote wording becomes the governing conditions under which these expenditures may be made.

Endnotes

i. Arctic-Boreal Vulnerability Experiment (ABoVE), http://above.nasa.gov/
ii. Polar Knowledge Canada, https://www.canada.ca/en/polar-knowledge
iii. Canadian High Arctic Research Station Act, http://laws-lois.justice.gc.ca/eng/acts/C-17.8/page-1.html
iv. The Minister's mandate letter, http://pm.gc.ca/eng/mandate-letters
v. Competitive Funding Process, https://www.canada.ca/en/polar-knowledge/fundingforresearchers.html
vi. 2017–18 Main Estimates, http://www.tbs-sct.gc.ca/hgw-cgf/finances/pgs-pdg/gepme-pdgbpd/index-eng.asp
vii. Future-Oriented Condensed Statement of Operations, https://www.canada.ca/en/polar-knowledge/future-orient-statement-of-operations-2017-2018.html
viii. Supplementary Information Tables, https://www.canada.ca/en/polar-knowledge/reports/2017-2018-department-plan/supplementary-information-tables.html
ix. Report on Federal Tax Expenditures, http://www.fin.gc.ca/purl/taxexp-eng.asp